BACTERIOLOGICAL

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HARVARD UNIVERSITY

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THE
HARVARD SCHOOL OF PUBLIC HEALTH

55 VAN DYKE STREET, BOSTON, MASS.

1925-26

PUBLISHED BY HARVARD UNIVERSITY

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LIBRARY
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BUILDING OF THE SCHOOL OF PUBLIC HEALTH

Buildings of the Harvard Medical School and of the Children's Hospital shown in the background

ANNOUNCEMENT

OF THE

HARVARD SCHOOL OF PUBLIC HEALTH

55 VAN DYKE STREET, BOSTON, MASS.

OF

HARVARD UNIVERSITY

FOR

1925-26

PUBLISHED BY HARVARD UNIVERSITY

1925

JULY

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1926

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NOVEMBER

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DECEMBER

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CALENDAR

1925

Sept. 28, Monday.	ACADEMIC YEAR BEGINS. Registration of students. Payment of the first instalment of the tuition fee is required on this date.
Oct. 12, Monday.	Columbus Day: a holiday.
Nov. 26, Thursday.	Thanksgiving Day: a holiday.
Nov. 30, Monday.	Payment of the second instalment of the tuition fee is required on or before this date.

RECESS FROM DEC. 23, 1925, TO JAN. 2, 1926, INCLUSIVE

1926

Jan. 1, Friday.	New Year's Day: a holiday.
Jan. 30, Saturday.	Payment of the third instalment of the tuition fee is required on or before this date.
Feb. 22, Monday.	Washington's Birthday: a holiday.

RECESS FROM APRIL 18 TO APRIL 24, INCLUSIVE

April 30, Friday.	Payment of the fourth instalment of the tuition fee is required on or before this date.
May 31, Monday.	Memorial Day: a holiday.
June 24, Thursday.	COMMENCEMENT.

SUMMER VACATION, FROM COMMENCEMENT TO SEPTEMBER 26, INCLUSIVE.

In order to insure equal periods of time for the various monthly courses, the following division of the academic year has been arbitrarily made:

Mon. Sept. 28–Sat. Oct. 24	OCTOBER
Mon. Oct. 26–Sat. Nov. 21	NOVEMBER
Mon. Nov. 23–Tues. Dec. 22	DECEMBER [1]
Mon. Jan. 4–Sat. Jan. 30	JANUARY
Mon. Feb. 1–Sat. Feb. 27	FEBRUARY
Mon. Mar. 1–Sat. Mar. 27	MARCH
Mon. Mar. 29–Sat. May 1	APRIL [2]
Mon. May 3–Sat. May 29	MAY

1 Christmas vacation from Dec. 23, 1925, to Jan. 2, 1926, inclusive.
2 Easter vacation from April 18 to April 24, 1926, inclusive.

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This Board is commonly known as the CORPORATION.

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GORHAM BROOKS, A.B. 50 State St., Boston

SECRETARY TO THE CORPORATION

FRANCIS WELLES HUNNEWELL, A.B., LL.B.
5 University Hall, Cambridge

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1925*

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The Woolworth Building, New York, N. Y.

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1927

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52 Wall St., New York, N. Y.

JAMES JACKSON, A.B. 90 Beacon St., Boston

CHARLES HENRY BRENT, A.M., D.D., LL.D.
237 North St., Buffalo, N. Y.

* The term expires, in each case, on Commencement Day of the year indicated.

1928

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82 Marlborough St., Boston

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1208 Eutaw Place, Baltimore, Md.

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SAMUEL SMITH DRURY, A.B., D.D., L.H.D., LITT.D.
St. Paul's School, Concord, N. H.

BENJAMIN LORING YOUNG, A.B., LL.B. Auburndale

1929

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BENJAMIN HARRISON DIBBLEE, A.B.
300 Montgomery St., San Francisco, Cal.

RICHARD DERBY, A.B., M.D. Oyster Bay, N. Y.

1930

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ROLAND WILLIAM BOYDEN, A.B., LL.B., LL.D.
60 State St., Boston

FREDERICK PICKERING CABOT, A.M., LL.B.
53 State St., Boston

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321 Shawmut Bank Building, Boston

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Assistant Professor of Industrial Medicine.

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Professor of Tropical Medicine.

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George Higginson Professor of Physiology.

Ernest E. Tyzzer, Ph.B., A.M., M.D. 175 Water St., Wakefield
George Fabyan Professor of Comparative Pathology.

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Professor of Vital Statistics.

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Professor of Bacteriology and Immunology.

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Assistant Professor of Pediatrics.

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Assistant Professor of Bacteriology and of Preventive Medicine, and *Director of the Division of Biologic Laboratories, Department of Public Health of Massachusetts.*

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Assistant Professor of Tropical Medicine.

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Assistant Professor of Tropical Medicine.

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Professor of Physiology and *Assistant Dean.*

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Instructor in Ventilation and Illumination.

Donald L. Augustine, S.B., Sc.D., 509 Audubon Road, Boston
Instructor in Helminthology

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Instructor in Vital Statistics

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Associate in Preventive Medicine and Hygiene.

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Instructor in Preventive Medicine and Hygiene, and *Assistant Director of the Division of Biologic Laboratories, State Department of Public Health.*

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Instructor in Tropical Helminthology.

Max Theiler, M.R.C.S., L.R.C.P., D.T.M. and H.
Assistant in Tropical Medicine. 19 Brook St., Brookline

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Office, 5 University Hall, Cambridge.

Dean: David L. Edsall, A.B., M.D., S.D.
Office, School of Public Health, 55 Van Dyke Street, Boston.

Assistant Dean: Cecil K. Drinker, S.B., M.D.
Office, School of Public Health, 55 Van Dyke Street, Boston.

Secretary: Susan C. Lyman.
Office, School of Public Health, 55 Van Dyke Street, Boston.

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Dean, David L. Edsall, A.B., M.D., S.D. (*ex officio*) *Chairman.*

Milton J. Rosenau, M.D., A.M., *Professor of Preventive Medicine and Hygiene.*

Edwin B. Wilson, A.B., Ph.D., *Professor of Vital Statistics.*

Hans Zinsser, A.M., M.D., *Professor of Bacteriology.*

Cecil K. Drinker, S.B., M.D., *Professor of Physiology.*

OTHER COMMITTEES

Visiting Committee of the School of Public Health appointed by the Overseers: Homer Gage, *Chairman*, N. Penrose Hallowell, Frederic C. Hood, John W. Elliot, James J. Minot, Robert Amory, Leonard C. Sanford, W. Irving Clark, Jr., B. H. Bristow Draper, Horace Morrison.

Higher Degrees: Ernest E. Tyzzer, *Chairman*, Hans Zinsser, Edwin B. Wilson, Cecil K. Drinker, *Secretary.*

Fellowships: Edwin B. Wilson, Cecil K. Drinker.

THE HARVARD SCHOOL OF PUBLIC HEALTH

HISTORICAL STATEMENT

The Harvard School of Public Health first gave instruction to students in the academic year 1922–23. For many years activity in public health had been rapidly increasing in Harvard University. The influence of the University upon public health through the pioneering and long-continued efforts of Dr. Henry P. Walcott, senior member of the Harvard Corporation, was important and far-reaching. Courses in the various departments had been gradually developed to meet the need for men trained to conserve public health. The field of public health is so broad that it is not strange that this School did not find its origin in any one department. The records show certain important steps in what has been essentially a gradual development. In 1909 a department of Preventive Medicine and Hygiene was established in the Medical School. The degree of Doctor of Public Health was first conferred in 1911. In this same year a department of Sanitary Engineering was inaugurated in the Engineering School. In 1913 a department of Tropical Medicine was formed. In 1918 a Division of Industrial Hygiene with clinical and laboratory facilities was organized in the Harvard Medical School.

Besides these activities which were directly concerned with the training of men for public health work, research was being carried on in the regular departments of the Harvard Medical School in Bacteriology, Pathology, Parasitology, Physiology, Bio-Chemistry, and others, which had perhaps a less direct but very real bearing on the development of the science of public health. On analysis it appeared that there were many activities under the various faculties of Harvard University besides those of Medicine and Engineering that had some bearing on public health. Under the Faculty of Arts and Sciences there were many courses, such as those in Physics, Chemistry, Zoölogy, Social Ethics, etc., which formed in certain cases important parts of the training of individuals for work in public health. In addition, under the Faculty of Arts and Sciences, a department of Hygiene had been established in 1914, which undertook the supervision of the health of the students in its broadest aspect. This department had collected much data of considerable value in public health.

In 1913 the "Harvard-Technology" School of Public Health was organized. It was under the joint management of Harvard University,

and the Massachusetts Institute of Technology. This School continued to operate until the fall of 1922, when, with the inauguration of the new Harvard School of Public Health, the "Harvard-Technology" School, as such, ceased to exist. However, the Massachusetts Institute of Technology continues to coöperate with the Harvard School of Public Health and also offers courses in public health through its department of Biology and Public Health, leading to the several degrees: bachelor, master, and doctor of science, doctor of philosophy, and to the certificate of public health.

As a result of these activities, the University found itself in possession of a substantial nucleus upon which to erect a new School of Public Health of larger scope, and in 1921 received from the Rockefeller Foundation a generous endowment for this purpose, known as the Henry P. Walcott Fund of Harvard University. This gift made it possible, first, to correlate and to enlarge the various departments already existing, such as Preventive Medicine and Hygiene, Bacteriology, Sanitary Engineering, Tropical Medicine, Parasitology, and Industrial Hygiene; second, to create a department of Vital Statistics and to develop new special fields of instruction, as Public Health Administration, Child Hygiene, Mental Hygiene, Communicable Diseases, and Ventilation and Illumination, and lastly, to purchase a building standing on land adjacent to that occupied by the Medical School in which to house the administration and the various groups concerned with the work of public health.

GENERAL STATEMENT

Purpose

It is the object of the School of Public Health to provide the scientific groundwork of expert knowledge which underlies efficient health administration together with some actual personal acquaintance with modern public health practice of the best types and thus to prepare students for careers in public health. The School of Public Health offers courses and opportunities to fit students for administrative, teaching, field, or laboratory positions. To this end, lectures, laboratory work, hospital exercises, field surveys, and other forms of instruction are offered by members of the Faculty and by special instructors actively engaged in public health work. Coöperation is also maintained with federal, state, and local health departments, and with hospitals and other agencies. Favorable opportunity is given to those who desire to contribute to knowledge through laboratory research or field investigation.

Facilities

Boston affords unusually good opportunities to study the operation and administration of state and municipal departments of health. Immediately adjacent to the School of Public Health is the Medical School of Harvard University with its well-equipped laboratories and other facilities. In connection with the Port of Boston, the Federal Government maintains maritime quarantine, immigration, medical and other health services. There are several large hospitals available for study and research in the communicable diseases. Abundant material for study of problems of mental hygiene may be found at the Psychopathic Hospital and at the Massachusetts School for Feeble-Minded at Waverley. In Boston are found the health problems of a metropolitan center, and within easy reach, those of large and small towns, as well as of country districts. Boston is an industrial center and its varied industries serve the purpose of industrial hygiene and industrial medicine. All the usual philanthropic health activities, such as baby hygiene stations, the Red Cross, anti-tuberculosis organizations, district and public health nursing services, and many other similar agencies are active in and around Boston. The School of Public Health is able to take advantage of these and other special opportunities.

Programs of Study

Students come to the School differing widely not only in their previous training, but also in their plans for work. Opportunity is therefore offered to follow programs of study in accordance with individual requirements. It is impossible to list in a catalogue such programs in terms of formal courses. Indeed there may be different programs within a single field. The catalogue and the tabular view are to be regarded only as indicating some of the more elementary formal courses. For students planning concentrated study, it is possible to arrange desirable programs covering a period varying from two or three months to a year or more in almost any single subject.

Opportunities for Part-Time Work

Courses are planned in such a way that students unable to spend a full academic year at the School may come for one or more months and secure courses in some special field. During the past year condensed courses lasting one full month were offered in Child Hygiene, Mental Hygiene, and Industrial Medicine. Courses covering a half-day for two months were offered in Vital Statistics, Sanitary Engineering, Ventilation and Illumination, Tropical Medicine and Nutrition. It is believed

that such arrangements will enable men already in the active field of Public Health to devote a limited amount of time to the study of one or two particular subjects. A glance at the tabular view (page 47) will give an idea of the possibilities of this plan for certain elementary courses. Students are thus able not only to take the intensive courses formally offered during the period that they are at the School, but to fit into their programs other training in special fields by individual arrangements with local laboratories, health agencies, and hospitals.

ADMISSION REQUIREMENTS

The candidates for the several degrees must satisfy the Administrative Board of their academic fitness (1) by a medical degree from an approved medical school, or (2) by evidence of adequate training in English and other modern languages, physics, inorganic, organic and bio-chemistry, biology, anatomy, histology, physiology, pathology, and bacteriology. The training indicated under (2) represents the minimum requirements for entrance to the Harvard Medical School, plus certain of the fundamental medical sciences of the first two years of the Medical School.

The mere completion of courses is not ordinarily satisfactory evidence of the fitness of a prospective student. The Administrative Board may require further evidence of present ability to utilize the training received, and ability to profit by the courses administered by the School. The medical degree (M.D.) is a prerequisite for the degree of Doctor of Public Health but not for the Bachelor of Public Health, the Master of Public Health, or the Doctor of Philosophy in Hygiene.

Those who do not meet the academic requirements for admission as candidates for degrees may be admitted as students to certain courses and programs of study at the discretion of the Administrative Board.

Opportunities are offered to research students who may desire to investigate special health problems or to make surveys without reference to a degree.

Admission of Women: Women whose previous training and experience is satisfactory may register in this School as special students. As in the past, women may also register for the degree of Doctor of Philosophy in Hygiene through Radcliffe College, taking their work in this School. The University does not confer the degrees of Doctor of Public Health, Master of Public Health, or Bachelor of Public Health on women.

All inquiries and communications should be addressed to the Secretary of the Harvard School of Public Health, 55 Van Dyke Street, Boston, Mass., who will forward upon request catalogues, admission

blanks, fellowship applications, and any other information desired. It will expedite matters in regard to admission of prospective students if they will supply the following information to the Secretary at the earliest possible date: (1) Date and place of birth; (2) Academic Education; (3) Medical Education; (4) Languages read and spoken; (5) Experience or professional career; (6) Proposed length of stay; (7) Special training desired.

DEGREES

1. Bachelor of Public Health

Prerequisites: The student must give evidence of having had satisfactory training in modern languages, physics, inorganic, organic and bio-chemistry, and in biology, physiology, anatomy, histology, pathology, and bacteriology. The total courses above outlined represent about four years' work of college grade and are the requirements to candidacy for this degree.

The satisfactory completion of an approved program of at least one year in the School of Public Health will be necessary to obtain the degree of Bachelor of Public Health.

2. Master of Public Health

Entrance: Students contemplating entrance for this degree must have recently received the degree of Bachelor of Public Health, or present satisfactory evidence of previous training and experience which are the equivalent of the Bachelor's degree in Public Health.

Candidacy for the degree of Master of Public Health: Before admission to candidacy for the degree of Master of Public Health, the student will be required to present a program of advanced study covering one year's work, which must be approved by the Committee on Higher Degrees.

Final Examination: On completion of a year of advanced study an oral examination will be given to test the student's broad acquaintance with the field of public health. The questions in this examination will deal with the following subjects which represent the fundamental divisions of public health education:

1. Physiology and Hygiene.
   - *a.* Physiology and Nutrition.
   - *b.* Ventilation and Illumination.
   - *c.* Industrial Hygiene and Toxicology.

2. Medical Zoölogy.
   a. Parasitology.
   b. Tropical Medicine.
3. Bacteriology.
   a. General.
   b. Immunology.
   c. Antitoxin and Vaccine Laboratory work.
4. Vital Statistics.
5. Sanitary Engineering.
6. Public Health Administration and Epidemiology.

Residence: For the degree of Master of Public Health, one academic year must be spent in residence at this University.

3. Doctor of Philosophy (in Hygiene)

The degree of Doctor of Philosophy is granted by the University on recommendation of the Division of Medical Sciences of the Faculty of Arts and Sciences in the following special fields:

Anatomy, including comparative anatomy.
Embryology, including microscopic anatomy.
Physiology or comparative physiology.
Biological chemistry.
Pathology or comparative pathology.
Bacteriology.
Pharmacology.
Hygiene.

Properly qualified students in public health have the opportunity to obtain the Doctorate in Philosophy in the field most closely allied to their special interests. This degree is administered by the Faculty of Arts and Sciences and in accordance with their regulations. Candidates for the degree of Doctor of Philosophy must fulfill certain preliminary requirements, must devote to approved advanced studies not less than two years — at least one of which must be spent in residence at this University — and must pass general examinations and present an account of original work in an accepted thesis, before being granted the degree.

4. Doctor of Medical Sciences

The degree of Doctor of Medical Sciences is administered by the Faculty of Medicine in accordance with their regulations. Further information concerning this degree may be had upon application.

The degrees of Doctor of Philosophy and Doctor of Medical Sciences are designed for those who wish to become productive scholars.

5. Doctor of Public Health

Entrance: Students contemplating entrance for this degree must present satisfactory evidence of having received the M.D. degree from an approved medical school.

Candidacy for the degree of Doctor of Public Health: Before admission to candidacy for the doctorate in public health, students will be required to take an oral examination covering the general field of public health. The questions in this examination will deal with the following subjects which represent the fundamental divisions of public health education:

1. Physiology and Hygiene.
   - *a.* Physiology.
   - *b.* Ventilation and Illumination.
   - *c.* Industrial Hygiene and Toxicology.
2. Medical Zoölogy.
   - *a.* Parasitology.
   - *b.* Tropical Medicine.
3. Bacteriology.
   - *a.* General.
   - *b.* Immunology.
   - *c.* Antitoxin and Vaccine Laboratory work.
4. Vital Statistics.
5. Sanitary Engineering.
6. Public Health Administration and Epidemiology.

Thesis: For the Doctorate of Public Health, the student must present a program of independent investigation to the Chairman of the Committee on Higher Degrees. The result of this investigation will form the basis of the thesis which must be presented as one of the final requirements for graduation. The thesis must be received by the Chairman of the Committee on or before the fifteenth day of December for degrees conferred in February, and on or before the fifteenth day of April for degrees conferred in June. Each thesis must be accompanied by a summary not exceeding 1200 words in length, which shall indicate clearly its purpose, methods and results.

Final Examination: On approval of the thesis the student will be required to expound and defend the subject matter of the thesis to the Faculty of the School of Public Health.

Residence: For the degree of Doctor of Public Health, at least one academic year must be spent in residence in this University.

FEES AND EXPENSES

The fees are: For instruction (including laboratory charges except breakage, damage, and loss of apparatus), $300 for one year; for a half-year alone, $180. The tuition will be charged on term bills issued and payable as follows: one-fourth on the term bill issued and payable September 28th, 1925, one-fourth on the term bill issued November 12th and payable November 30th, one-fourth on the term bill issued January 12th and payable January 30th, and one-fourth on the term bill issued April 12th and payable April 30th. Students desiring to take single courses may do so at the rate of $50 for one full month's work, payable in advance.

Bills for miscellaneous charges will be rendered at the time the indebtedness is incurred.

All indebtedness to the University must be paid by all candidates for degrees at least one day before Commencement.

Students who are candidates for degrees in the middle of the academic year must pay all dues to the University at least one day before the day upon which the degrees are to be voted.

A student who leaves during the year is charged to the end of the tuition period in which he leaves, provided before that time he gives the Dean notice in writing of his withdrawal; otherwise he is charged to the end of the academic year or to the end of the tuition period in which such notice is given.

When a student's connection with the University is severed, all charges against him must be paid at once.

No degree can be granted until the student has paid the full tuition fee for each year in which he has been registered as a member of the School.

Any student whose indebtedness to the University remains unpaid on the date fixed for payment is deprived of the privileges of the University until he is reinstated. Reinstatement is obtained only by consent of the Dean of the Department in which the student is enrolled, after payment of all indebtedness and a reinstatement fee of $10. A student may rent a microscope from the School upon application to the Committee on Microscopes, but the School offers no guarantee that it will keep on hand a sufficient number of such instruments to furnish one for each student. A deposit of $1 with the Dean will entitle the student to the use of a locker in the School buildings.

STILLMAN INFIRMARY FEE

Not later than October 1 in each academic year, any student may pay to the Bursar the sum of $7 for the maintenance of the Stillman Infirmary; and, on the order of a physician, every student who has taken advantage of this opportunity will be given, in case of sickness, in return for the fee, a bed in a ward, board, and ordinary nursing for a period not exceeding two weeks in any one academic year.

The School of Public Health provides a physician, Dr. George P. Denny, who will give physical examination or medical treatment to students without charge, during his office hours, or at other times by appointment.

BOND REQUIRED OF STUDENTS

Every student is required to file with the Bursar on his entrance to the School a bond of $50 executed by two sufficient bondsmen (one of whom must be a citizen of the United States or by a surety company duly qualified to do business in Massachusetts, or he may deposit with the Bursar fifty dollars in United States bonds), or to deposit $50 in money, to cover the loss or injury of any property belonging to the University, or for which it is responsible. If the student desires to rent a microscope a bond of $100 must be filed instead of one of $50. Blank forms of bonds may be obtained at the Dean's Office or from the Bursar. No officer or student of the University is accepted as a bondsman. *Students will be held responsible for the payment of fees until they have notified the Dean, in writing, of their intention to withdraw from the School and have subsequently received their bond from the Bursar.*

LOCATION AND BUILDINGS

The School of Public Health is located at 55 Van Dyke Street. The building, formerly occupied by the Infants' Hospital, is large and adequate to meet the needs of the growing School of Public Health. It stands on land adjacent to that occupied by the Medical School and in close proximity to the Peter Bent Brigham Hospital, the Children's Hospital, the Collis P. Huntington Hospital, and the new Lying-In Hospital. The Boston Psychopathic Hospital is also within a few blocks. The students of the School of Public Health have the privilege of the full use of the Harvard Medical School buildings.

LIBRARIES

The Library of the School of Public Health is combined with the central library of the Harvard Medical School. It is housed in the Admin. istration Building of the Harvard Medical School adjacent to the School of Public Health, and is open from 9 A.M. until 10 P.M. on week days, and from 9 A.M. until 1 P.M. on Saturdays. There are at present 40,143 volumes and 83,292 pamphlets in this library, and 376 current periodicals are kept on file.

Students also have the privilege of the use of the College Library in Cambridge, and of the various departmental libraries belonging to the University, in all of which there are 2,256,500 volumes and pamphlets.

Beside the University libraries, students in this School may use the Boston Public Library on Copley Square, and the Boston Medical Library at No. 8 the Fenway, which contains 84,000 volumes and 56,000 pamphlets, and 650 current periodicals. This very valuable library is open to those who desire to consult medical literature on week days from 9.30 A.M. until 6 P.M., and in July, August and September from 9.30 A.M. until 5 P.M.

FELLOWSHIPS

The School offers a limited number of fellowships of $1200 each. These fellowships are open to students of high scholarship and exceptional ability. Applicants whose experience and training have fitted them to pursue an original piece of research work along lines of Public Health will be given preference. No fellowship will be granted to a student spending less than one academic year at the School.

Applications for fellowships should be filed with the Secretary of the School of Public Health.

ANNOUNCEMENT OF COURSES

BACTERIOLOGY

HANS ZINSSER, A.B., A.M., M.D., *Professor of Bacteriology and Immunology.*

BENJAMIN WHITE, Ph.B., Ph.D., *Assistant Professor of Bacteriology* and *Director of the Division of Biologic Laboratories, Department of Public Health of Massachusetts.*

W. L. MOSS, B.S., M.D., *Assistant Professor in Bacteriology and Immunology*

J. HOWARD MUELLER, Ph.D., *Assistant Professor of Bacteriology and Immunology.*

[redacted], M.D., *Instructor in Bacteriology and Immunology.*

FRANCIS B. GRINNELL, A.B., M.D., *Instructor in Bacteriology and Immunology*

WILLIAM A. HINTON, S.B., M.D., *Instructor in Bacteriology* and *Assistant Director of Wassermann Laboratory.*

The Department of Bacteriology and Immunology of the Harvard School of Public Health, in addition to a course in bacteriology adapted to the needs of medical students, offers a course of lectures and demonstrations in immunity and specific therapy. A course is given once a year for a limited number of advanced students, with particular reference to the needs of public health officers. The work is adapted in each case to the needs of the student applying, by special arrangements with the instructing staff.

Opportunity for diagnostic serological work is offered in the Department in connection with the Wassermann Laboratory of the State of Massachusetts, and provision is made for individual work upon problems of serum production, standardization, etc., under Dr. Benjamin White of the Massachusetts Antitoxin Laboratory.

Advanced work, and opportunities for investigation are available, admission to this type of work depending upon the fitness of the applying student.

Bacteriology A 1

Three afternoons a week (Monday, Wednesday, and Friday) for four months (October, November, December, and January).

This course is the regular Medical School course, and, provided there is adequate accommodation, is open to students in the School of Public Health who are insufficiently prepared in bacteriology and immunology.

Lectures in Immunology

Tuesday and Thursday afternoons, 2 to 3, for three months (November, December, and January).

This course consists of lectures on the principles of infection and resistance with serological demonstrations.

Public Health Bacteriology A

Five mornings a week for two months (March and April).

A course will be given to a limited group of students in advanced bacteriology of epidemiological work and special serology. Arrangements for this course will be made each year according to the number and needs of the applicants.

Wassermann Laboratory A

This course is planned to give a practical working knowledge of serologic and bacteriologic examinations used in the diagnosis of syphilis and gonorrhea. The major portion of time will be devoted to Wassermann technic and allied reactions. Abundant material is available for the study of the methods taught.

Arrangements as to hours will be made to suit the needs of individual students.

Research in Bacteriology C

Special advanced courses will be offered in Immunology and the Technique of Serum Study, and will be open to a limited number of students.

Opportunity will also be given for properly qualified students to pursue research work along varied lines.

APPLIED IMMUNOLOGY — BIOLOGIC PRODUCTS

BENJAMIN WHITE, Ph.B., Ph.D., *Director of the Division of Biologic Laboratories, Massachusetts Department of Public Health.*

ELLIOTT S. A. ROBINSON, A.B., M.D., Ph.D., *Assistant Director of the Division of Biologic Laboratories.*

Antitoxin and Vaccine Laboratory A

A limited number of students will be accepted twice a year, on Monday, Wednesday and Friday afternoons in October and March, at the State Antitoxin and Vaccine Laboratory. Instruction will be given in the organization, equipment, and administration of such a laboratory. The students will receive instruction, with demonstrations, in the preparation, testing, and distribution of antitoxic and antibacterial serums, vaccine virus, bacterial vaccines and other biologic products, with conferences correlating this experience with the underlying principles and theories involved.

Antitoxin and Vaccine Laboratory C

Opportunities will be afforded to properly qualified students for special research work in this field by arrangement with Dr. White.

PARASITOLOGY

ERNEST E. TYZZER, Ph.B., A.M., M.D., *Professor of Comparative Pathology.*

MARSHAL FABYAN, A.B., M.D., *Assistant Professor of Comparative Pathology.*

DONALD L. AUGUSTINE, S.B., Sc.D., *Instructor in Helminthology.*

Parasitology A

Three afternoons a week (Monday, Wednesday, and Friday) for one month (February).

The student is trained to identify the more important parasites as they appear in the various stages of their development. The diseases of the human being due to parasitic protozoa are also considered with special reference to their identification and life cycles. Human material, cultures, and experimentally infected animals are utilized in the study of these microörganisms. The ectoparasites, especially those concerned in the production or transmission of human diseases, are considered as fully as the allotted time will allow.

Parasitology B

Five mornings a week for three months (March, April, and May).

This course will cover the protozoa, helminthes, and arthropoda concerned in human disease, and also certain animal diseases transmitted to man. The instruction will be adapted to the needs of graduate and special students.

Research in Parasitology C

During the present year research has been carried on in the following subjects: The relation of insects to flagellate disease; research on the life history of a coccidium; and study of certain intestinal *amoebae and flagellates.* Properly qualified students desiring to do research work will be welcomed into the laboratory.

PREVENTIVE MEDICINE AND EPIDEMIOLOGY

Milton J. Rosenau, M.D., A.M., *Charles Wilder Professor of Preventive Medicine and Hygiene.*

Lloyd D. Felton, A.B., M.D., *Assistant Professor of Preventive Medicine and Hygiene.*

Benjamin White, Ph.D., *Assistant Professor of Preventive Medicine and Hygiene, Director of the Division of Biologic Laboratories, State Department of Public Health.*

W. Lloyd Aycock, M.D., *Associate in Preventive Medicine and Hygiene.*

Joseph W. Schereschewsky, A.B., M.D., *Associate in Preventive Medicine and Hygiene.*

Walter L. Treadway, M.D., *Associate in Preventive Medicine and Hygiene.*

Elliott S. A. Robinson, M.D., Ph.D., *Instructor in Preventive Medicine and Hygiene, Assistant Director of the Antitoxin and Vaccine Laboratory, State Department of Public Health.*

Epidemiology A

Lectures and demonstrations — Tuesday and Thursday 3–5, January, February, and March.
Field and practical work — all day in May.

The course consists of lectures, demonstrations, and practical field work. The lectures are designed to give the principles, historic develop-

ment, and methods of epidemiology with their application to public health administration of the communicable diseases. A number of well-studied epidemics are described and discussed with special reference to their origin, mode of spread and control. The course also includes a consideration of the following subjects: the epidemiology of air-borne, water-borne, milk-borne, and insect-borne infections; the epidemiology of selected representative diseases; disinfection and disinfectants; seasonal prevalence and periodicity; geographic distribution; the laws of epidemics. A selected course of collateral reading is assigned. Each student is required to study and report briefly upon an epidemic. Each student is also required to make a special study of some topic in epidemiology, which is made the subject of a report and discussion at one of the conferences. The afternoons of April are allotted to surveys or special work in epidemiology and public health administration. The month of May is devoted to instruction in practical epidemiology; this part of the field work is done in coöperation with the Massachusetts State Department of Public Health. Each student is assigned to a member of the Department who acts as a tutor, supervises his reading, guides his field work and surveys and helps generally with his problems. The system permits the development of individual interests. Students taking the course are also invited to attend a Journal Club which meets regularly during the academic season.

Epidemiology B

Advanced work. By arrangement with Professor Rosenau.

This consists in special investigations of a particular disease or problem from both the field and the laboratory standpoints.

Research in Preventive Medicine and Epidemiology C

During the past year research has been carried on in the following subjects: Epidemiology of pneumonia; the virulence of the pneumococcus; isolation of the protective antibody from antipneumococcus serum; immunologic properties of antipneumococcus solutions; studies on soluble specific precipitating substances for antipneumococcus sera; the epidemiology of poliomyelitis; the epidemiology of cancer; and mental hygiene with special reference to the industrial worker and the immigrant. Properly qualified students desiring to do advanced work will be welcomed into any of the lines of research which have been reviewed.

COMMUNICABLE DISEASES

Edwin H. Place, M.D., *Clinical Professor of Pediatrics.*

Adrien Bourcart, M.D., *Assistant.*

Communicable Diseases A

Five mornings a week for one month (April).

The course will be blocked out in such a manner that individual students may take single sections of the work.

Practical experience will be given at the South Department, Boston City Hospital, in the diagnosis, means of isolation, and care of scarlet fever, measles, and diphtheria, supplemented by special exercises in various clinics on pneumonia, typhoid fever, influenza, infantile paralysis, tuberculosis, and venereal diseases.

Research in Communicable Diseases B and C

The South Department of the Boston City Hospital is equipped with 300 beds which are used only by patients with communicable diseases. The two diseases found most frequently in this department are scarlet fever and diphtheria, but all of the other common communicable diseases, such as whooping cough, mumps, measles, chicken pox, tonsillitis, croup, streptococcus sore throats, etc., may be found.

Arrangements may be made for students to observe the work in the department daily, and to spend from one to six months studying and working with one particular disease. Properly qualified men may also be taken on as regular members of the staff on special interneships for a period of 6 or 8 months in order to get a general familiarity with the communicable diseases.

TROPICAL MEDICINE

Richard P. Strong, Ph.B., M.D., S.D., *Professor of Tropical Medicine.*

Andrew W. Sellards, A.M., M.D., *Assistant Professor of Tropical Medicine.*

George C. Shattuck, M.D., A.M., *Assistant Professor of Tropical Medicine.*

Max Theiler, M.R.C.S., L.R.C.P., D.T.M., and H., *Assistant in Tropical Medicine.*

Joseph Bequaert, Ph.D., *Instructor in Entomology.*

Walter G. O. Christiansen, S.B., *Assistant in Tropical Medicine.*

Jack H. Sandground, S.B., S.M., S.D., *Instructor in Tropical Helminthology.*

Tropical Infectious Diseases A

Three afternoons a week (Monday, Wednesday, and Friday) for three months (November, December and January).

The course consists of lectures, laboratory work, and clinical instruction.

The most important infectious and other preventable diseases of tropical and foreign countries will be dealt with from the following points of view:

1. The etiology, principles, and modern methods of diagnosis.
2. The methods of transmission and mode of spread.
3. The hygienic problems involved in their control and prevention.
4. The administrative and practical measures to be employed in the control of these diseases under endemic and epidemic conditions.
5. The value of a knowledge of the methods of diagnosis, methods of transmission, prevention, and treatment of the tropical diseases of men and animals in connection with the study, prevention, and treatment of the human infectious diseases in general.

Advanced Work in Tropical and Foreign Medicine B

For students entering the School with the intention of specializing in public health in tropical countries, a series of courses lasting eight months is provided. The program followed must include advanced courses in exotic and tropical diseases in:

1. Practical bacteriology and pathology.
2. Practical protozoölogy and helminthology.
3. Practical entomology.
4. Epidemiology (including field work).
5. Clinical, at infectious diseases hospital.

The courses in bacteriology, protozoölogy, helminthology, and entomology are fundamental in connection with the prevention and control of tropical or exotic diseases. Courses relating to tropical climatology, botany, venomous animals and the biological effects of sunlight in tropical countries will also be of advantage and of particular interest to the health officer who desires a more cosmopolitan experience, and are provided for those students desiring them. The need for thoroughly trained men in the field of exotic and tropical medicine is especially urgent.

The program for such advanced students will naturally vary in individual cases and must be approved by the Professor of Tropical Medicine before submission to the Administrative Board.

Special Clinical Work: There are opportunities from time to time for one or more students to attend clinical work for longer or shorter periods at the Boston City Hospital, where there is a service for tropical and foreign diseases under Dr. George C. Shattuck of the Department. There are also opportunities for special clinical work in several hospitals or in the different laboratories situated in the tropics with which Harvard University is connected.

Advanced Medical Entomology B

The course presupposes an elementary knowledge of insects. It will consist of advanced instruction in the structure, classification, and development of all Crustacea, Arachnoidea, Myriopoda, and Insecta known to be concerned or likely to be concerned in the health of man and domestic animals. A study will be made of the various ways in which these organisms are active either as parasites, as carriers of diseases, or as the cause of local injuries or physiological disturbances. Laboratory work will provide practical training in identification, dissection, methods of studying life-histories and habits, and experimental transmission of diseases. Stress will be laid upon furnishing the student with the most useful monographs and reference books. He will also become acquainted with the extensive special literature so as to be able to carry on independent research work in tropical and foreign countries.

Research in Tropical and Foreign Medicine C

The research work in progress includes studies in relation to the Hamilton Rice Expedition in connection with the Department of Tropical Medicine to the Amazon Valley in 1924–25; studies upon certain "free-living" and saprophytic microörganisms and their relation to disease; upon experimental chemotherapy of some of the protozoal and trematode infections; upon the etiology of rat-bite fever; the study of the life-history of mosquito larvae especially with reference to the influence of various chemical substances present in the water; and a study of the hymemopterous parasites of ticks and their possible use in the control and eradication of ticks which transmit disease.

PUBLIC HEALTH ADMINISTRATION

EUGENE R. KELLEY, A.B., M.D., *Lecturer in Public Health Administration, Commissioner*, Department of Public Health of Massachusetts.
GEORGE H. BIGELOW, A.B., M.D., Dr.P.H., *Associate in Public Health Administration; Director*, Division of Communicable Diseases, Department of Public Health of Massachusetts.
CHARLES V. CHAPIN, A.B., M.D., Sc.D., *Lecturer on Public Health Administration; Superintendent of Health*, City of Providence.

Special lectures in this course during the year 1924–25 were given by the following:

Dr. FRANCIS X. MAHONEY, *Commissioner*, Department of Public Health, City of Boston.
Dr. WALTER L. TREADWAY, *Surgeon*, U. S. Public Health Service.
Dr. W. S. RANKIN, *Secretary*, North Carolina State Board of Health.
Dr. WILSON G. SMILLIE, *Senior State Director*, International Health Board of the Rockefeller Foundation.
Professor EUGENE WAMBAUGH, *Professor of Law*, Harvard Law School.

Public Health Administration A

Tuesday and Thursday afternoons for three months (October 3 to 5, November 4 to 5.30, December 3 to 5).
Field work — all day in May.

This course consists of lectures, demonstrations and practical field work, given mainly by health officers actively engaged in the work of health administration. The federal, state, municipal and rural situations will be covered; the historical development, budgets and budget making, economic problems, hospital administration and public health education will be discussed; special lectures upon sanitary law will be part of this course. Active coöperation has been effected with the Health Department of the City of Boston, the Massachusetts State Department of Public Health and the activities of the U. S. Public Health Service in and around Boston; also with the City Department of Health of Providence, R. I., Manchester, N. H., of Newton, Mass., and other health departments. During the field work the students will meet some thirty persons actually engaged in various phases of health and medical work and will see their organizations actually functioning. These will include large and small city health departments, rural boards of health, school medical inspection, communicable disease control, milk and other food handling and inspection, water and sewage plants, industrial medicine,

health units, tubercular, venereal and other clinics, health examinations, contagious disease hospitals, etc. This work will be given during the month of May on account of favorable weather conditions for field work, and because at this time the students will have had during the school course the scientific and theoretical ground work on which public health administration rests.

Research in Public Health Administration C

Special opportunities to investigate certain problems in federal, state, or city health administration are afforded to students who are specially qualified.

PHYSIOLOGY

Cecil K. Drinker, S.B., M.D., *Professor of Physiology.*
Lawrence T. Fairhall, S.M., A.M., Ph.D., *Instructor in Physiology.*
Louis A. Shaw, A.B., *Instructor in Physiology.*

Physiology A

The courses in physiology as related to the problems of hygiene and in ventilation and illumination will be given Monday, Wednesday, and Friday afternoons during October, November, and December. The close alliance of these subjects renders it desirable that students register for the entire period. In exceptional cases, however, opportunity may be given to take physiology, ventilation or illumination separately.

The following subjects will be discussed during the hours devoted to physiology.

Respiration: The physiology of respiration will be reviewed and will lead to a discussion of the effects of high and low atmospheric pressure, carbon monoxide, carbon dioxide, and the commoner non-toxic dusts. The necessary physiological features of rescue apparatus will be demonstrated. Such matters as deep breathing, shallow breathing, resisted breathing, vital capacity, cough and pulmonary edema will be considered in relation to their hygienic significance.

Circulation: The physiology of blood formation and blood destruction will be followed by a discussion of lymph formation and lymph drainage. The general circulation will be reviewed with particular reference to the physiology of cardiovascular breakdown and the methods now available for testing circulatory efficiency.

Fatigue and Repair: The physiological organization of the neuromuscular apparatus will be reviewed and will be followed by a discussion of such subjects as fatigue and repair in physiological processes, practice, exercise, and industrial fatigue.

Hearing and Vision: A brief discussion of the physiology of hearing and vision with special reference to the physiology of tests for acuity of both these senses will be given.

No regular laboratory exercises accompany this course which consists of lectures, demonstrations, conferences, and assignments of reading.

Research in Physiology C

The research activities of the laboratory are concerned with problems of circulatory and muscular efficiency, the evaluation of fibrotic processes due to different dusts and to problems of poisoning by several of the heavy metals.

Properly qualified students will be given opportunities to work in the laboratory provided they can spend at least six months of undivided time.

Nutrition A

Lawrence T. Fairhall, S.M., A.M., Ph.D., *Instructor in Physiology.*

Monday, Wednesday, and Friday afternoons in January, Tuesday and Thursday afternoons from 2 to 3 in February.

An advanced course which will include lectures, conferences, and assigned reading upon the chemistry and physiology of nutrition, particularly from the view point of large groups of people. Such phases as quality and quantity requirements, vitamins and digestibility in their especial relations to public health will be adequately treated. The conventional presentation of the subject will, however, be subordinated to its more vital and practical aspects. Modern problems in the economics of food production, distribution and utilization, famine conditions and the relation of food and nutrition to certain phases of world politics will receive especial treatment. The course will include visits to various plants handling and producing articles of food.

Properly qualified students will be given an opportunity for laboratory work.

VENTILATION AND ILLUMINATION

Philip Drinker, S.B., Ch.E., *Instructor in Ventilation and Illumination.*

Constantin P. Yaglou, A.B., M.S., *Instructor in Ventilation and Illumination.*

R. M. Thomson, *Assistant in Ventilation and Illumination.*

Ventilation and Illumination A

Monday, Wednesday, and Friday afternoons for two months (October, November, and December).

The subjects offered will be the following:

1. The measurement of air flow with use of the Pitot tube, Venturi meter, orifice meter, wet and dry gas meters, continuous recording devices, and manometers.

2. Psychrometry: Determinations of humidity with wet and dry bulb thermometers, hair psychrometers, and recording devices.

3. The use of the Kata thermometer.

4. Experiments in air conditioning supplemented by visits to buildings and factories using various types of air conditioning equipment.

5. The use of gas mask, respirators, hose masks and oxygen breathing apparatus. The determination of their efficiency, and resistance to breathing.

6. Physiological and practical aspects of air conditioning by direct experimentation with the effects of temperature, humidity, and air movement, with the application of these factors to general comfort and ventilation efficiency. Body temperature, metabolism and comfort at work and at rest under varying atmospheric conditions.

7. The determination and microscopy of dusts, fumes and smokes in air by devices such as filters, water scrubbers, Tyndallmeter, and electric precipitator. The effects of particle size, specific surface, and number as determined by size frequency curves; the effect of atmospheric conditions on the physical state of particulate matter.

8. Illumination; Photometric studies in the plotting of light distribution curves, glare, diffusion, speed of vision and visual acuity. Industrial and domestic illumination and determination of illumination intensities.

Research in Ventilation and Illumination C

The investigations now in progress consist in methods of studying dusts, fumes, and smokes in air, their toxic effects, and photometric methods for their study while suspended in still and moving air. In the general field of air conditioning, studies in the effect of various temperatures, humidities, and air movement on circulation and metabolism, are also to be undertaken.

A limited number of duly qualified students will be given an opportunity to do research work in any of these fields, or in the selected topics covered in the general course.

INDUSTRIAL MEDICINE

David L. Edsall, A.B., M.D., S.D., *Dean of the Harvard Medical School and the Harvard School of Public Health.*

Alice Hamilton, M.D., A.M., *Assistant Professor of Industrial Medicine.*

Derric C. Parmenter, A.B., M.D., *Instructor in Industrial Medicine.*

Arthur B. Emmons, 2d, A.B., M.D., *Instructor in the Practice of Industrial Medicine.*

W. Irving Clark, Jr., A.B., M.D., *Instructor in the Practice of Industrial Medicine.*

Harry Linenthal, A.B., M.D., *Instructor in Industrial Medicine.*

Robert S. Quinby, M.D., *Instructor in the Practice of Industrial Medicine.*

Louis R. Daniels, M.D., *Instructor in the Practice of Industrial Medicine.*

Harold W. Stevens, A.B., M.D., *Assistant in Industrial Medicine.*

Noel G. Munroe, A.B., M.D., *Assistant in Industrial Medicine.*

Halstead G. Murray, M.D., *Assistant in Industrial Medicine.*

Industrial Medicine A

Derric C. Parmenter, AB., M.D., *Instructor in Industrial Medicine.* With the coöperation and assistance of special lecturers, instructors, and assistants.

Daily, all day for one month (February) with the exception of Tuesday, Thursday, and Saturday afternoons.

This course is arranged to meet the requirements of students who desire a survey of industrial medicine and methods of industrial practice. It is adapted to the needs of students unable to spend a longer period in Industrial Medicine at the School, and will include demonstrations and lectures on industrial toxicology, industrial and mercantile medical practice, ventilation, illumination, factory sanitation, safety engineering, and compensation. Special effort will be made to correlate the lectures and practical work in this course by means of visits to industrial mercantile establishments and clinics.

Students electing this course will do well to avoid conflicting courses during this period.

Students interested primarily in industrial hygiene will find opportunities for further instruction of both a practical and theoretical nature in Industrial Medicine C.

Industrial Toxicology A

Alice Hamilton, M.D., A.M., *Assistant Professor of Industrial Medicine.*

Tuesday and Thursday afternoons from 2 to 3 for two months (December and January).

An advanced course which will include lectures, conferences, and assigned reading upon the industrial poisons together with visits to factories and definite studies of field conditions.

Industrial Medicine C

Opportunities for research and special study will be open to a limited number of properly qualified students. Special attention will be paid to the solving of practical problems under actual working conditions in industrial establishments.

VITAL STATISTICS

Edwin B. Wilson, A.B., Ph.D., *Professor of Vital Statistics.*
Carl R. Doering, A.B., M.D., *Instructor in Vital Statistics.*
John L. Jones, S.B., M.D., *Assistant in Vital Statistics.*

Vital Statistics A

Five mornings a week for two months (December and January).

The elementary course in Vital Statistics will consist of lectures and laboratory work designed to familiarize the student with the facts already well established in this field, with the methods of graphical representation, and with the basic theory of probability and correlation necessary alike for the proper analysis of statistical data, and for the adequate layout of any contemplated statistical survey.

Text: G. C. Whipple, *Vital Statistics.*

References: Arne Fisher, *Mathematical Theory of Probabilities.*
R. Pearl, *Biometry and Vital Statistics.*

A knowledge of the elements of the infinitesimal calculus, though not a prerequisite for the elementary course, is desirable, and is indispensable for all really critical or advanced work in statistical theory.

Biomathematics A

Tuesday and Thursday afternoons 2 to 3 in October and 3 to 4 in November.

Lectures on certain aspects of mathematics in their relation to the biological sciences. Arithmetic and algebra, symbolism, permanence of

form, exponents, permutations and combinations, binomial theorem, constants and variables, uniform rates, uniformly varying rates (accelerations), integrated rates, areas, limits of quotients and sums, infinitesimals, functions, differentials, derivatives, integrals, law of organic growth (Malthus), logarithms, exponentials, inverse functions, mathematical tables, interpolation, summation, law of unimolecular reaction, law of autocatalytic or buffer action, environmental inhibition of growth, treatment of experimental data, empirical equations and the determination of natural laws, probability, curve-fitting, the statistical or kinetic view of equilibrium in nature.

Vital Statistics B

Students who have a satisfactory elementary knowledge of statistics and calculus will be directed in their reading of more advanced operations of Vital Statistics, including the theory of frequency curves.

References: Arne Fisher, *Mathematical Theory of Probabilities.*
D. C. Jones, *Course in Statistics.*
G. U. Yule, *Statistics.*
T. Kelly, *Statistical Method.*

Research in Vital Statistics C

Opportunities for special research work in Vital Statistics are open to students whether specializing in Vital Statistics or primarily in some other field of work, who desire to make a statistical investigation of their own connected with the public health, or who may desire to coöperate in the general program of statistical research of the department.

Investigations are in progress or planned: with respect to hospital statistics of particular diseases using the large amount of material available in the hospitals associated with the School; with respect to the incidence of diseases with special reference to particular industries in coöperation with Dr. Parmenter and his associates in industrial hygiene or in coöperation with industries which may desire such investigations as a rational basis of the health programs for their employees; and with respect to the inter-relations of Vital Statistics and economic phenomena.

Research in Biomathematics C

Opportunities are offered to students who desire to pursue the quantitative and theoretical sides of various biological problems of a non-statistical nature or of a nature statistical in another sense than generally implied in the technical term Vital Statistics.

The Statistical Laboratory

The laboratory for instruction and research in Vital Statistics is housed on the second floor of the building of the School of Public Health on Van Dyke Street, and is equipped with various graphical and mechanical aids including sorting, tabulating and calculating machinery.

SANITARY ENGINEERING

Gordon M. Fair, S.B., *Instructor in Sanitary Engineering.*
Melville C. Whipple, *Instructor in Sanitary Chemistry.*

The Principles of Sanitary Engineering A

Five mornings a week for two months (October and November) at Pierce Hall, Cambridge.

Mr. Fair.

A course of lectures and laboratory work arranged especially for students in the School of Public Health. The lectures will cover the following topics: — (*a*) Municipal Sanitation; (*b*) Water Supply and Water Purification; (*c*) Plumbing; (*d*) Sewerage and Sewage Treatment; (*e*) Disposal and Treatment of Wastes; (*f*) Building Sanitation; (*g*) Rural Sanitation.

In the laboratory the students will have opportunity to become familiar with the apparatus and instruments used in connection with studies of water purification and sewage treatment; they will be taught how to interpret water analyses and how to read engineering plans. In the field they will be taught how to make sketches and reports of engineering works. Arrangements will be made for students to visit water purification works, sewage treatment works and other works of sanitation in the vicinity of Boston, accompanied by an instructor.

Water and Sewage Analysis B

Five mornings a week for one month (February) at Pierce Hall, Cambridge.

Mr. Whipple and Mr. Fair.

A short practical course of lectures and laboratory work for those students who desire to supplement the course in Sanitary Engineering by a further study of water, sewage, and waste analysis. Special attention will be given to the use of analyses in the control of processes of water purification, sewage treatment works, and to the interpretation of analytical results. The topics covered will be Color, Turbidity and

Odor of Water; Microscopic Examinations; Bacterial Counts and Tests for Bact. Coli; Dissolved Oxygen and Carbonic Acid; Hardness; Chlorides; the Nitrogen Cycle, etc.

Research in Sanitary Engineering C

There is opportunity for properly qualified students to pursue advanced work in subjects relating to the field of sanitary engineering. During the past year departmental research has been carried on in the following subjects: stream pollution; hydraulic and physical principles of rapid sand filtration; hydrological statistics; alum deposits in slow and rapid sand filters; garbage disposal in Metropolitan Boston; current practice in disposal of municipal refuse in American cities.

MENTAL HYGIENE

C. Macfie Campbell, M.A., B.Sc., M.D., *Professor of Psychiatry.*

With the coöperation and assistance of special lecturers, instructors, and assistants.

Mental Hygiene A

Daily, all day for one month (February) except Tuesday, Thursday, and Saturday afternoons.

This course, under the direction of Professor Campbell, offers the student opportunity for becoming familiar with the general field of mental hygiene and with its relations to other aspects of public health.

Mental Hygiene covers not only the traditionally recognized conditions of mental disorders ("Insanity") and defect ("Feeble-mindedness"): it deals also with manifold forms of apparent physical incapacity (including the "psychoneuroses"), with many social problems (prostitution, alcoholism, vagrancy), with maladjustments in home, in school, in industry.

The course will include a review of the fundamental principles of abnormal psychology, of the main types of mental abnormality, of the prevention, management and treatment of the personal and social factors involved in these disorders, and of the organization by the community of the necessary facilities for dealing with these problems.

The course will consist of lectures, clinical demonstrations, visits to hospitals, courts and other organizations, with supervised reading and opportunities for intensive clinical study along special lines (neurosyphilis, school hygiene, delinquency).

Elementary Mental Hygiene

Mondays 4 to 5, for ten weeks, beginning the middle of March.

This is a preliminary course on Medical Psychology given to the first-year medical students, consisting of lectures by Professor Campbell.

Research in Mental Hygiene C

Students holding the degree of Doctor of Medicine who satisfy the professor of their qualifications to do advanced work in Mental Hygiene may spend from one to six months under the guidance of Professor Campbell, working at the Boston Psychopathic Hospital. Here there is exceptional clinical material available and the student will have an opportunity at the bedside, in the various laboratories and in the out-patient department to study the problems related to mental instability, mental defect and mental disorders, both in adults and in children; the student can become familiar with the psychiatric aspect of such topics as prostitution, alcoholism, delinquency and many other social and public health problems. Those interested in a special topic of research will find the necessary clinical material available, and it will be possible for the student to make use of material in other institutions than the Boston Psychopathic Hospital.

CHILD HYGIENE

Richard M. Smith, A.B., M.D., *Assistant Professor of Child Hygiene.*
Merrill E. Champion, A.B., M.D., C.P.H., *Instructor in Child Hygiene.*
Wilfred L. McKenzie, M.B., *Research Fellow in Child Hygiene.*
With the coöperation of special lecturers.

Child Hygiene A

Daily, all day for one month (March) except Tuesday, Thursday and Saturday afternoons.

Instruction will consist of lectures and conferences, and in observation of work in the field done under public and private direction. The State Department of Public Health and the Boston City Health Department offer facilities for the study at first hand of well organized Divisions of Child Hygiene. Prenatal clinics, post-natal baby clinics, child welfare clinics, and work among school children will be demonstrated in actual operation. Illegitimacy will be presented through the work of the Florence Crittenton Home. Work for handicapped children will be dis-

cussed in connection with visits to the State School at Waverley, the State Hospital School at Canton, and the Judge Baker Foundation. Lectures on other special subjects of child hygiene will be given and visits made to associations in and near the city.

During the year 1924–25 special lectures and instruction were given by the following:

Miss Mabel C. Bragg.
William P. Cooke, D.M.D.
Robert D. Curtis, M.D.
Robert L. DeNormandie, M.D.
Miss Abigail A. Eliot.
C. Stanley Raymond, M.D.
John E. Fish, M.D.
James L. Gamble, M.D.
Joel E. Goldthwait, M.D.
Alice Hamilton, M.D.
William Healy, M.D.
George S. Hill, M.D.
Percy R. Howe, D.M.D.
Mr. C. C. Jones.
Foster S. Kellogg, M.D.
Maynard Ladd, M.D.
Harry C. Low, M.D.
Lyman G. Richards, M.D.
Mr. Robert W. Rivers
Alfred P. Rogers, D.M.D.
C. Morton Smith, M.D.
Fritz B. Talbot, M.D.
Douglas A. Thom, M.D.
Miss Hazel Wedgwood.
Miss Ruth L. White.
Benjamin White, Ph.D.
Paul White, M.D.
Charles F. Wilinski, M.D.
Miss Mabel R. Wilson.

Child Hygiene B

For students who have completed Child Hygiene A it will be possible by special arrangement with the head of the department to devote additional time to child hygiene, and to follow the various phases of the work for a longer period of time and at closer range than during the one month's course. Students may be assigned to hospital and child welfare clinics where they will be given an opportunity to take responsibility and share in the conduct of the work. Arrangements may be made for special study in pediatrics in connection with the Graduate School of Medicine.

Child Hygiene C

Research

There will be an opportunity for qualified students to investigate any phase of child hygiene. The results of such special studies may be published by the student if approved by the head of the department.

COURSES IN OTHER DEPARTMENTS OF THE UNIVERSITY

Students in the School of Public Health may take courses in other departments of the University subject to the following conditions: (1) Students must be properly qualified; (2) the consent of the professor in charge of the course must be obtained in each case; (3) the approval of the Administrative Board of the School of Public Health must be procured before one of these courses may be included as a part of a program.

Medical School

The Medical School is very closely affiliated with the School of Public Health, and the courses offered are open to students in this School. Of special interest to students in public health is the very unusual group of courses offered by the Medical School on Tuesday and Thursday afternoons, covering a wide range of subjects. A special bulletin is issued describing these courses. The research facilities of some departments of the Harvard Medical School present valuable opportunities for students in public health.

Graduate School of Medicine

The Graduate School of Medicine offers courses from October to June, most of which last one month, to graduates of Class A medical schools. Another group of short courses is given from June 1st to September 30th. These courses are open also to properly qualified undergraduate students and women. Courses in Surgery and Roentgenology and in Pediatrics have been found especially valuable for public health students.

Dental School

The Dental School is affiliated with the School of Public Health and is situated nearby so that students in this School who are interested in any aspect of dental work may take advantage of the courses offered in that School.

Engineering School

A number of courses are offered in the Engineering School which are closely related to public health. There are also facilities in the Engineering School for students wishing to do advanced research work along public health lines from the engineering standpoint.

Graduate School of Education

Public health students who are planning to teach public health or who wish to make a study of the educational side of public health may take courses in the Graduate School of Education, which offers such courses as The Principles of Educational Psychology and Mental Hygiene, School Hygiene, The Clinical Testing of Children, Problems in Mental and Physical Development, etc.

Graduate School of Business Administration

Students specializing in Industrial Hygiene or Public Health Administration may take special courses in the Graduate School of Business Administration, as Industrial Management, Business Statistics, etc.

Faculty of Arts and Sciences

Some courses offered by the Faculty of Arts and Sciences, more especially in the Graduate School, have been found useful for students in public health, such as advanced work in Psychology, Chemistry, Zoölogy, Housing, Climatology, etc.

Bussey Institution — Graduate School of Applied Biology

The Bussey Institution offers opportunities for graduate instruction and research in those principles and problems which underlie the practical applications of zoölogy and botany to human welfare.

COURSES IN MASSACHUSETTS INSTITUTE OF TECHNOLOGY

The School of Public Health maintains close coöperation with the Massachusetts Institute of Technology. A group of courses given at the Massachusetts Institute of Technology not listed in this catalogue is open to the students in the School of Public Health, and may, with the approval of the Administrative Board, be included in a general program and will be counted toward a degree.

Catalogues of the various schools listed above will be sent upon application to the Secretary of the Harvard School of Public Health, 55 Van Dyke Street, Boston 17, Mass.

OPPORTUNITIES FOR CLINICAL WORK BY SPECIAL ARRANGEMENT

The Harvard School of Public Health can make arrangements for students desiring special clinical work in the various local hospitals. In the year 1922–23 clinical courses lasting one month in Industrial Surgery and in Roentgenology were arranged at the Massachusetts General Hospital and the Boston City Hospital. Arrangements were also made for clinical work in Pediatrics at the Boston Dispensary and the Children's Hospital, also in coöperation with the official and unofficial health agencies in health centers, hygiene stations, etc.

OPPORTUNITIES FOR LABORATORY RESEARCH BY SPECIAL ARRANGEMENT

The Harvard School of Public Health can make arrangements for students desiring special laboratory work in the various city, state and private laboratories.

During the year 1923–24, a student spent three months studying metabolism of children in the laboratories of the Massachusetts General Hospital.

OPPORTUNITIES FOR FIELD WORK BY SPECIAL ARRANGEMENT

The Harvard School of Public Health can secure opportunities for students desiring special field work not offered in this School by individual arrangements with the State and City Boards of Health, or with the many health agencies that are active in and near Boston.

During the year 1924–25, one student spent full time doing special field work in the City Health Department of Providence.

STUDENTS

Barreto, João de Barros, B.S.Litt. (*Alfredo Gomes Coll.*) 1906, M.D. (*Rio Medical School*) 1912. *Ventilation and Illumination.*	Rio de Janeiro, Brazil
Berlot, Josef Anton, M.D. (*Univ. of Prague*) 1918. *Serology.*	Fiume, Italy
Biddle, Sydney, A.B., 1913, M.D. (*Univ. of Pennsylvania*) 1917. *General Course.*	Cambridge
Bohuszewicz, Zygmunt, C.E. (*Inst. of Technology at Lambert*) 1909. *Industrial Medicine.*	Warsaw, Poland
Campos, Franklin Augusto de Moura, M.D. (*São Paulo Medical School*) 1919. *Physiology.*	São Paulo, Brazil
Chiang, Shang Feng, M.D. (*St. John's Univ.*) 1923. *Parasitology.*	Tukin, China
Elkind, Henry Byron, M.D. (*Tufts Coll. Medical School*) 1915. *Mental Hygiene.*	Howard, R. I.
Enneis, William Howard, M.D. (*Univ. of Georgia Medical Department*) 1921. *Epidemiology.*	Clayton, N. M.
Follmann, John George, M.D. (*Univ. of Budapest*) 1920. *General Course.*	Gyula, Hungary
Freese, Herbert Linwood *Bacteriology.*	Norton, Virginia
Ginsbourg, Benjamin, Sc.B. (*Lycée Rollin*) 1914, M.D. (*Faculté de Médicine*) 1924. *Bacteriology.*	Paris, France
Hosmer, Gladys Eleanor Holden, A.B. (*Radcliffe Coll.*) 1909, Ed.M. (*Harvard Univ.*) 1924. *Public Health Administration.*	Concord
Huber, Edward Godfrey, A.B. (*Univ. of Michigan*) 1903, M.D. (*ibid.*) 1905. *Bacteriology.*	Menominee, Wis.
Jeup, Bernard Henry, B.S. (*Purdue Univ.*) 1922. *Sanitary Engineering.*	Indianapolis, Ind.
Karacsony, Geza Sylvester, A.B. (*Coll. of Kovno*) 1910, M.D. (*Univ. of Budapest*) 1920. *Communicable Disease.*	Debrecsen, Hungary

Lanpher, Howard Arthur, M.D. (*Tufts Coll. Medical School*) 1907. Mattapan
General Course.

Lubczynski, Jozef Makary, M.D. (*Krakow Univ.*) 1912. Warsaw, Poland
Child Hygiene.

Leonhartsberger, Hans, M.D. (*Univ. of Vienna*) 1919. Vienna, Austria
Child Hygiene.

Meuleman, Marie Thérèse, M.D. (*Univ. of Brussels*) 1924. Brussels, Belgium
Child Hygiene.

Morse, Fred Winslow, B.S. (*Dartmouth Coll.*) 1918, M.D. (*Harvard Univ.*) 1924. Amherst
General Course.

Nobechi, Keizo, M.D. (*Tokyo Imperial Univ.*), 1919, Ph.D. (*ibid.*) 1925. Tokyo, Japan
Bacteriology.

Oilar, Arthur L, M.D. (*Univ. of Indiana, School of Medicine*) 1913. Russiaville, Ind.
Epidemiology.

Pantaleoni, Massimo, M.D. (*Royal Univ. of Rome*) 1915. Rome, Italy
General Course.

Pollerman, Arthur, M.D. (*Medical Univ. of Budapest*) 1909. Budapest, Hungary
Child Hygiene.

Pope, Alton Stackpole, A.B. (*Bowdoin Coll.*) 1910, C.P.H. (*Harvard-Technology School of Public Health*) 1920, M.D. (*Tufts Coll. Medical School*) 1925. Manchester
Epidemiology.

Pribyl, Joseph, M.D. (*Univ. of Prague*) 1919. Prague, Czechoslovakia
Oral Hygiene.

Riley, Cathryn Vedalia, A.B. (*Wellesley Coll.*) 1912, M.D. (*Johns Hopkins Medical School*) 1922, D.P.H. (*ibid.*) 1923. Washington, D. C.
Child Hygiene.

Ryder, Karol, M.D. (*Univ. of Göttingen*) 1910. Bendrin, Poland
Child Hygiene.

Siaulis, Benedict, B.S. (*Univ. of Moscow*) 1913. Kovno, Lithuania
Pharmacology.

Sierakowski, Stanislaw Waclaw, M.D. (*Krakow Univ.*) 1914. Warsaw, Poland
Bio-Chemistry.

Suttie, Roscoe Henry, Ph.D. (*Yale Univ.*) 1911, C.E. (*ibid.*) 1913. New Haven, Conn.
Sanitary Engineering.

Torres, Octavio, M.D. (*Medical School of Bahia*) 1909. Bahia, Brazil
Pathology.

Vallabhakorn, Mom Chao, M.D. (*Petrograd Medical Academy*) 1914. Bangkok, Siam
Public Health Administration.

Vanicek, Francis, M.D. (*Univ. of Prague*) 1921.
Bacteriology. Kysperk, Czechoslovakia

Watson, Percy Theodore, A.B. (*Carleton Coll.*) 1903, M.D. (*Johns Hopkins Medical School*) 1907. Fenchow, China
Epidemiology.

Welling, William Corcoran, A.B. (*Yale Coll.*) 1909. Hartford, Conn.
Vital Statistics.

Willner, Otto. M.D., (*Univ. of Prague*) 1905.
Public Health Administration. Peking, China

Zozaya, José, S.B. (*St. Louis Univ.*) 1921, M.D. (*ibid.*) 1923. San Antonio, Texas
Tropical Medicine.

DEGREES

On June 19, 1924, Degrees were conferred as follows: —

Master of Public Health

Seemampillai Francis Chellappah, L.M.S. (*Ceylon Medical Coll.*) 1912, D.T.M. and H. (*London School of Tropical Medicine*) 1914, D.P.H. (*King's Coll., London*) 1916.

Shang Feng Chiang, M.D. (*St. John's Univ., Shanghai*) 1923.

Walter Joseph Connell, A.B. (*Univ. of Iowa*) 1915, S.B. (*Univ. of Illinois*) 1917, M.D. (*ibid.*) 1919.

Herbert Luther Lombard, A.B. (*Bowdoin Coll.*) 1912, M.D. (*ibid.*) 1915.

Doctor of Public Health

Afranio do Amaral, Litt.B. (*Gymnasio da Bahia, Brazil*) 1910, M.D. (*Bahia Medical School*) 1916.
Special Field, Tropical Medicine.
Thesis, "On the Prevention of Snake Poisoning."

Clarence Olds Sappington, A.B. (*Whitman Coll.*) 1911, M.D. (*Leland Stanford Jr. Univ.*) 1918.
Special Field, Industrial Hygiene.
Thesis, "A Study of the Morbidity and Accident Experience of a Boston Public Utility during the Period 1918–1922."

On February 24, 1925, Degrees were conferred as follows: —

Doctor of Public Health

José Zozaya, S.B. (*St. Louis Univ.*) 1921, M.D. (*ibid.*) 1923.
Special Field, Tropical Medicine.
Thesis, "Studies on Immunization against Cholera and Plague."

TABULAR VIEW

	October	November	December	January
A.M.	Principles of Sanitary Engineering A	Principles of Sanitary Engineering A	Vital Statistics A	Vital Statistics A
P.M. Tuesday and Thursday	Bio-Mathematics A 2–3 Public Health Administration A 3–5	Immunology 2–3 Bio-Mathematics A 3–4 Public Health Administration A 4–5.30	Immunology 2–3 Industrial Toxicology A 2–3 Public Health Administration A 3–5	Immunology 2–3 Industrial Toxicology A 2–3 Epidemiology A 3–5
Monday, Wednesday and Friday	Physiology A Ventilation and Illumination A Antitoxin and Vaccine Laboratory A	Tropical Medicine A Physiology A Ventilation and Illumination A	Tropical Medicine A Physiology A Ventilation and Illumination A	Tropical Medicine A Nutrition A
	February	March	April	May
A.M.	Mental Hygiene A (All day) Industrial Medicine A (All day)	Child Hygiene A (All day) Pub. Health Bacteriology A	Communicable Diseases A Pub. Health Bacteriology A	Field Work in Pub. Health Administration and Epidemiology A (all day)
P.M. Tuesday and Thursday	Nutrition A 2–3 Epidemiology A 3–5	Epidemiology A 3–5		
Monday, Wednesday and Friday	Parasitology A	Antitoxin and Vaccine Laboratory A		

Advanced courses, special courses, and courses in research are not included in this list. *This tabular view is given for convenience and should not be regarded as representing approved courses in the sense that any combination of these courses necessarily represents a satisfactory program.* Most students, and all students who are candidates for higher degrees, may include in the program courses not listed here, and perhaps courses not formally listed in the catalogue.

OFFICIAL REGISTER OF HARVARD UNIVERSITY

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These publications include:—

The Annual Reports of the President and of the Treasurer.

The Annual University Catalogue.

The Annual Catalogues of the College and the several Professional Schools of the University; the Descriptive Pamphlet; the Announcements of the several Departments; etc., etc.